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10/585,451	05/04/2007	Kazuhiro Atsumi	46884-5497 (228674)	2498
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EXAMINER WASAFF, JOHN SAMUEL				
ART UNIT 3742		PAPER NUMBER		
NOTIFICATION DATE 04/20/2011		DELIVERY MODE ELECTRONIC		

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary

Application No.

10/585,451

Applicant(s)

ATSUMI ET AL.

Examiner

JOHN WASAFF

Art Unit

3742

Period for Reply -- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 27 January 2011.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 2-7 and 9-26 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 2-7 and 9-26 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-940)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date 02/14/11, 04/06/11
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.
2. Claims 23-24 rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.
3. Claim 23 recites the limitation "the displacement" in lines 2, 12.
4. Claim 24 recites the limitation "the displacement" in lines 4, 5, 13, 14.
5. Claim 25 recites the limitation "the displacement" in lines 12, 13.
6. Claim 26 recites the limitation "the displacement" in lines 4, 12, 13.
7. There is insufficient antecedent basis for these limitations in the claims.

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.
9. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.
10. Claims 2-7, 9-26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fukuyo et al. (EP1338371A1) in view of Kurosawa et al. (US Patent No. 5,463,202).

11. In claim 2, Fukuyo teaches a laser processing method for irradiating an object to be processed with a first laser beam (laser beam machining method and apparatus; see title) while converging the first laser beam with a lens such that a converging point is positioned within the object (object 1 is irradiated with laser light L while locating a light-converging point P within the object 1; para. [0120]), and forming a modified region within the object along a cutting line in the object (modified region 7 formed within object 1 along cutting line 5; para. [0120]); the method comprising: a height acquiring step of irradiating the object with a second light for measuring a height of a main surface of the object while converging the second light with the lens (imaging data processor 125 acquires height of main surface by reflected light from observation light source 117; para. [0143]), and acquiring the height of the main surface along the cutting line while detecting reflected light reflected by the main surface in response to the irradiation (imaging data processor 125 acquires height of main surface; para. [0144], [0145]); and a processing step of emitting the first laser beam and moving the lens and the object relative to each other along the main surface while adjusting a gap between the lens and the main surface according to the acquired height, so as to form the modified region along the cutting line (overall controller 127 controls movement of Z-axis stage via stage controller 115, thereby moving lens 105 and object 1 relative to each other and forming a modified region along line to be cut; para. [0150], [0151]), wherein the height of the main surface along the cutting line is acquired at a first time interval while moving the lens and the object relative to each other at a first speed along the main surface in the height acquiring step; and wherein the modified region is formed while moving the lens and the object relative to each other at a second speed faster than the first speed along the main surface and adjusting the gap between the lens and the main surface at a second

time interval shorter than the first time interval in the processing step (combination calculating section 151 of overall controller 127 sends calculated data to the stage controller 115, which adjusts the stages 109, 111 so as to attain the calculated magnitude of stage moving speed; para. [0304]).

12. In claims 3 and 23, Fukuyo teaches all the features as set forth above, including the height acquiring step comprises: a measurement preparatory step of holding the lens at a measurement initial position set such that a converging point of the second light is located at a predetermined position with respect to the object (select laser light source, i.e., hold lens at initial position, S101; Fig. 15); a step of starting emitting of the second light while holding the lens at the measurement initial position (illuminate object, S105; Fig. 15), moving the lens and the object relative to each other along the main surface, and releasing the lens from being held at the measurement initial position in response to reflected light of the second light reflected by the main surface (move object in z-axis direction to position focal point of visible light from observation light source, S109; Fig. 15); and a step of adjusting the gap between the lens and the main surface after the release while detecting the reflected light of the second light reflected by the main surface, so as to acquire the height of the main surface along the cutting line (move object in z-axis in direction where light-converging point of laser light is located within object, S111; Fig. 15).

13. In claims 4 and 24, Fukuyo teaches all the features as set forth above, including the processing step comprises: a processing preparatory step of setting a processing initial position for holding the lens with respect to the main surface according to the height of the main surface along the cutting line acquired by the height acquiring step, and holding the lens at thus set

processing initial position (select laser light source, i.e., hold lens at initial position, S101; Fig. 15); a first processing step of starting emitting of the first laser beam while holding the lens at the processing initial position, and moving the lens and the object relative to each other so as to form the modified region in one end part of the cutting line (move object in z-axis direction to position focal point of visible light from observation light source, S109; Fig. 15); and a second processing step of releasing the lens from being held at the processing initial position after forming the modified region in the one end part of the cutting line, and moving the lens and the object relative to each other after the release while adjusting the gap between the lens and the main surface according to the height of the main surface along the cutting line acquired in the height acquiring step, so as to form the modified region (move object in z-axis in direction where light-converging point of laser light is located within object, S111; Fig. 15).

14. In claim 5, Fukuyo teaches all the features as set forth above, including in the height acquiring step, the first laser beam is emitted when acquiring the height of the main surface along the cutting line, so as to form the modified region along the cutting line (laser source 101 emitted during height to form a modified region along line to be cut; para. [0150], [0151]).

15. In claim 6, Fukuyo teaches all the features as set forth above, including the modified region formed in the height acquiring step is formed between the modified region formed in the processing step and the main surface (modified region formed between modified region formed in processing step and main surface 3; para. [0152]).

16. In claims 7, 17-18, Fukuyo teaches all the features as set forth above, including the cutting line includes a first cutting line, wherein the height acquiring step moves the lens relative to the object in a first direction extending along the first cutting line, so as to acquire the height

of the main surface along the first cutting line, and then moves the lens relative to the object in a second direction opposite from the first direction (imaging data processor 125 connects to overall controller 127, which moves Z-axis stage 113 via stage controller 115; para. [0150]); and wherein the processing step forms the modified region along the first cutting line in the first direction (modified region form along region to be cut; para. [0152]).

17. In claims 9-14, 19-22, 25-26 Fukuyo teaches all the features as set forth above, including a laser processing apparatus for irradiating an object to be processed with a first laser beam (laser beam machining method and apparatus; see title); the apparatus comprising: a lens for converging the first laser beam (light converging lens 105) and a second light for measuring a height of a main surface of the object (observation light source 117; para. [0142]); height acquiring means for acquiring the height of the main surface of the object by detecting reflected light reflected by the main surface in response to irradiation with the second light (imaging data processor 125 acquires height of main surface by reflected light; para. [0143], [0144]); moving means for moving the object and the lens relative to each other along the main surface of the object (stage controller 115; para. [0144]); holding means for holding the lens such that the lens freely advances and retracts with respect to the main surface (focus adjustment of laser light L may be effected by moving the light-converging lens 105 in the optical axis direction of laser light L; para. [0182]); and control means for controlling respective behaviors of the moving means and holding means (overall controller 127; para. [0144]).

Applicant's remaining claim limitations have not been given patentable weight, since they recite method steps rather than differentiating between structures.

18. In claims 15 and 19, Fukuyo teaches all the features as set forth above, including the lens is held at the measurement initial position between a position corresponding to one end of the cutting line and a position corresponding to a position on the outside of the one end on an extension of the cutting line, and between a position corresponding to the other end of the cutting line and a position corresponding to a position on the outside of the other end on the extension of the cutting line (i.e., amount of movement object to be processed in z-axis direction determined, S101; Fig. 15).

19. In claim 16, Fukuyo teaches all the features as set forth above, including the processing step comprises: a processing preparatory step of setting a processing initial position for holding the lens with respect to the main surface according to the height of the main surface along the cutting line acquired by the height acquiring step, and holding the lens at thus set processing initial position (S103, Fig. 15); a first processing step of starting emitting the first laser beam while holding the lens at the processing initial position, and moving the lens and the object relative to each other so as to form the modified region in the one end part of the cutting line (S109, Fig. 15); and a second processing step of releasing the lens from being held at the processing initial position after forming the modified region in the one end part of the cutting line, and moving the lens and the object relative to each other after the release while adjusting the gap between the lens and the main surface according to the height of the main surface along the cutting line acquired in the height acquiring step (S111, Fig. 15), so as to form the modified region (S113, Fig. 15).

20. Regarding claims 2-7, 9-26, Fukuyo fails to teach: that the second light comprises a laser light source; a second line to be cut or the steps of acquiring the height along a second line to be cut.
21. Kurosawa teaches a laser machining system with control based on machining state recognition that uses a laser light source and a photodetector to measure the amount of reflected laser light (see abstract, col. 4, ln. 45-65 of Kurosawa).
22. It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Fukuyo to include the feature of Kurosawa, since the laser light source provides for a more accurate and easily controlled light source than the observation light source taught in Fukuyo (see col. 4, ln. 45-65 of Kurosawa).
23. Regarding the second line to be cut or the steps of acquiring the height along a second line to be cut, Fukuyo implicitly describes forming a second modified region along which a second line is intended to be cut (see para. [0169]). It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Fukuyo to include a second line to be cut, since this only involves a routine repetition of the process taught by Fukuyo.

Response to Arguments

24. The previous rejections under 35 U.S.C. 112 have been withdrawn. Applicant's arguments filed 27 Jan. 2011 have been fully considered but they are not persuasive. Applicant argues on p. 24 of remarks that Fukuyo fails to teach acquiring the height of the main surface of the object along the cutting line and adjusting the gap between the lens and the main surface according to the acquired height. Examiner respectfully disagrees. Fukuyo teaches a light beam

illuminates the substrate surface, including the line along which the object is intended to be cut, and the reflected beam yields imaging data, which is then used to control movement of Z-axis stage (para. [0143], [0144] of Fukuyo). Thus, the adjustment gap between the lens and main surface is dependent on the acquisition of reflected image data, which depends on height of surface. Applicant also argues on p. 24 that Fukuyo fails to teach the ongoing process for positioning. However, it does not appear that such language is present in the claims as amended. For these reasons, the arguments are not persuasive.

Double Patenting

25. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the “right to exclude” granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

26. A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

27. Claims 1-22 provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-14 of copending Application No. 10/585,343, claims 1-18 of copending Application No. 10/585,660. Although the conflicting claims are not identical, they are not patentably distinct from each other because all describe a laser processing method which relies on measuring displacement measured with a second laser beam and a laser processing apparatus with a lens, displacement acquiring means, moving means, holding means, and control means.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

Conclusion

28. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to JOHN WASAFF whose telephone number is (571)270-1283. The examiner can normally be reached on Monday through Friday, 7:30am to 5:00pm, alternating Fridays off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tu Hoang can be reached on (571)272-4780. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/JOHN WASAFF/
Examiner, Art Unit 3742
04/12/11

/Henry Yuen/
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